

CLAIMS

1. (Currently Amended) A process for producing a non-aqueous sol-gel spin-on glass material comprising a hybrid glass/polymer material, by reacting an alkyl or dialkyl substituted trialkoxysilane or dialkyl substituted dialkoxysilane with a silane diol, wherein said alkyl group has from 1 to 8 carbon atoms, wherein the reaction of the alkyl substituted trialkoxysilane or dialkyl substituted dialkoxysilane silane with the silane diol is carried out in a non-aqueous medium in the presence of a catalyst, wherein the catalyst is selected from: a) a tin catalyst or b) a dibutyltin diluarate, titanium isopropoxide, acetic acid or trifluoroacetic acid catalyst.
2. (Original) The process of claim 1, wherein the silane diol is a diphenylsilanediol, a 1,3-Bis (3-hydroxypropyl) tetramethoxysilane, a 1,3-Bis (4-hydroxybutyl) tetramethylsilane, a fluorinated silane diol, or a mixture of one or more of these silane diols.
3. (Original) The process of claim 1, wherein the alkyl group is replaced with a methacryloxypropyl, acryloxypropyl, or epoxy moiety.
4. (Canceled)
5. (Original) The process of claim 1, wherein the trialkoxysilane or dialkoxysilane has 1 to 3 C₁ to C₈ alkyl, methacryloxypropyl and/or alkoxy groups on the same molecule.
6. (Canceled)
7. (Original) The process of claim 1, further comprising adding a phosphor dopant.
8. (Currently Amended) The process of claim 7, wherein the ~~copolymer comprises acrylo acid~~ phosphor dopant comprises YAG base phosphor or moisture sensitive

phosphor nano-particles or an organic material selected from organic dyes or metal complexes.

9. (Original) The process of claim 1, further comprising adding a UV light blocking material and/or an oxygen scavenger.

10. (Original) The process of claim 1, further comprising adding a light-scattering material.

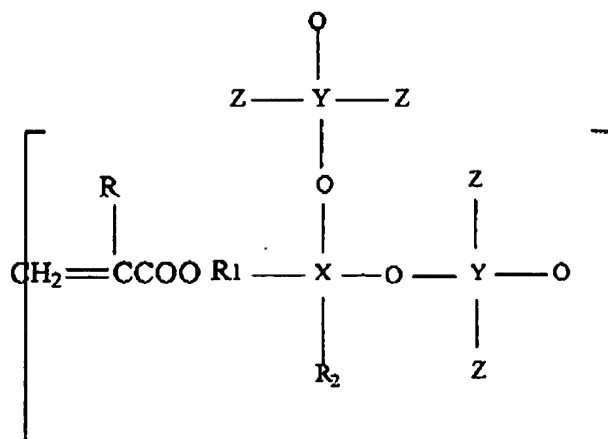
11. (Original) The process of claim 1, further comprising adding a coupling agent.

12. (Original) The process of claim 11, wherein the coupling agent is a dibutoxyaluminoxetriethoxysilane, a mixture of zirconium isopropoxide and methacrylic acid, or another transition metal propoxide.

13-17 (Canceled)

18. (Currently Amended) A non-aqueous sol-gel spin-on glass material comprising a hybrid glass/polymer material containing a phosphor dopant, which comprises YAG base phosphor or moisture sensitive phosphor nano-particles or an organic material selected from organic dyes or metal complexes, said sol-gel spin-on-glass material selected from the group having the following formulas:

Formula I



Where R = Hydrogen, $\text{C}_1\text{-C}_8$ Alkyl, Halogenated $\text{C}_1\text{-C}_8$ Alkyl or Glycidylalkyl

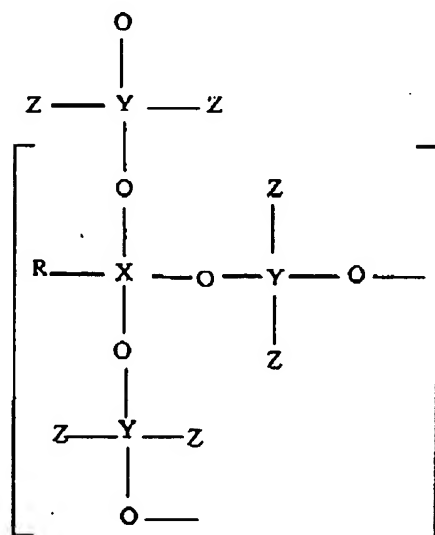
R_1 = Ethyl, Propyl, another $\text{C}_1\text{-C}_8$ Alkyl, Halogenated $\text{C}_1\text{-C}_8$ Alkyl, Phenyl, or Halogenated Phenyl

R_2 = Methyl, Ethyl or another $\text{C}_1\text{-C}_8$ Alkyl, Methyl, Ethyl

X, Y = Si, Ge, Ti or Sn

Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl

Formula II

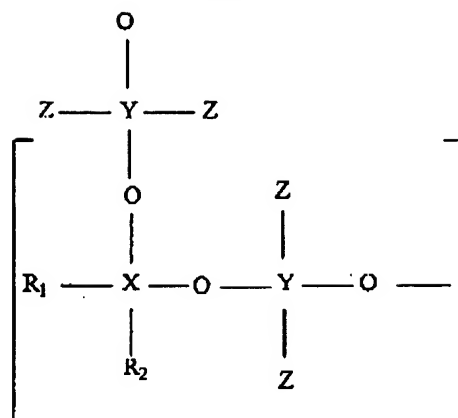


Where R = Alkyl ($\text{C}_1\text{-C}_8$), Phenyl, Substituted Phenyl, Methacryloxyalkyl, Acryloxyalkyl or Glycidylalkyl

R_1 = Phenyl or Substituted Phenyl, Ethyl, Propyl or another C_1 to C_8 Alkyl, or Trifluoroalkyl

X, Y = Si, Ti, Ge, or Sn

Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl

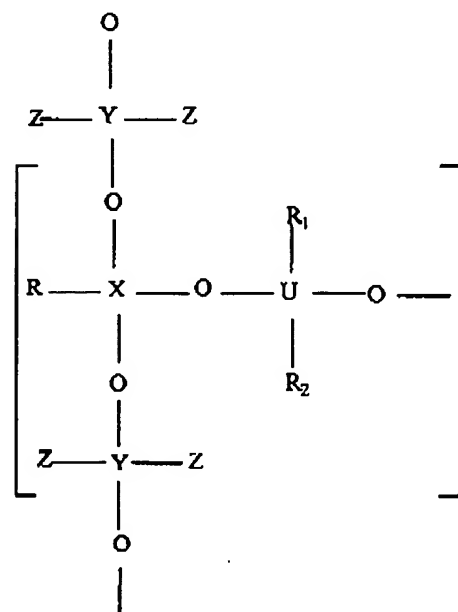
Formula III

Where R₁ = Phenyl or Substituted Phenyl, Ethyl, Propyl or another C₁ to C₈ Alkyl, or Trifluoroalkyl Trifluoropropyl

R₂ = Methyl, Ethyl or another C₁ to C₈ Alkyl

X, Y = Si, Ge, Ti, or Sn

Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl

Formula IV

Where R = Alkyl (C₁-C₈), Phenyl, Substituted Phenyl, Methacryloxyalkyl, Acryloxyalkyl or Glycidyoxyalkyl

R₁ = Phenyl or Substituted Phenyl, Ethyl, Propyl or another C₁ to C₈ Alkyl, Phenyl or Trifluoroalkyl

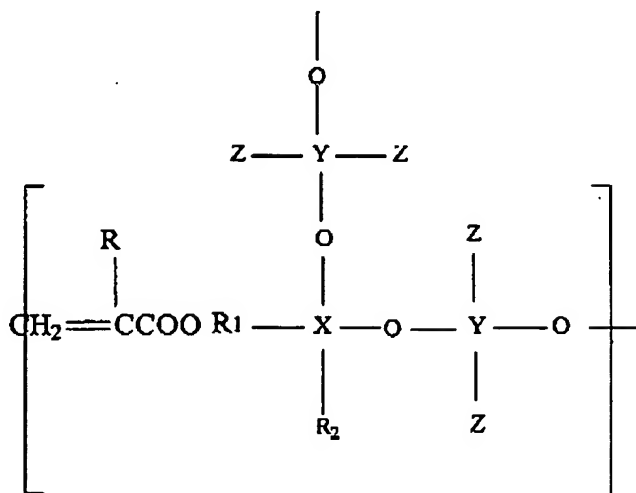
R₂ = Alkyl, Methyl, Ethyl or another C₁ to C₈ Alkyl or Phenyl

X, U, Y = Si, Ge, Ti, or Sn

Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl

19. (Currently Amended) The non-aqueous sol-gel spin-on glass material of claim 18, having the following formula:

Formula I



Where R = Hydrogen, C₁-C₈ Alkyl, Halogenated C₁-C₈ Alkyl or Glycidylalkyl

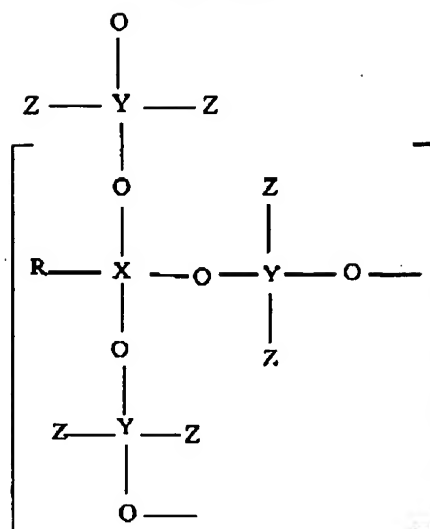
R₁ = Ethyl, Propyl, another C₁-C₈ Alkyl, Halogenated C₁-C₈ Alkyl, Phenyl or Halogenated Phenyl

R₂ = Methyl, Ethyl or another C₁-C₈ Alkyl

X, Y = Si, Ge, Ti or Sn

Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl

20. (Currently Amended) The non-aqueous sol-gel spin-on glass material of claim 18, having the following formula:

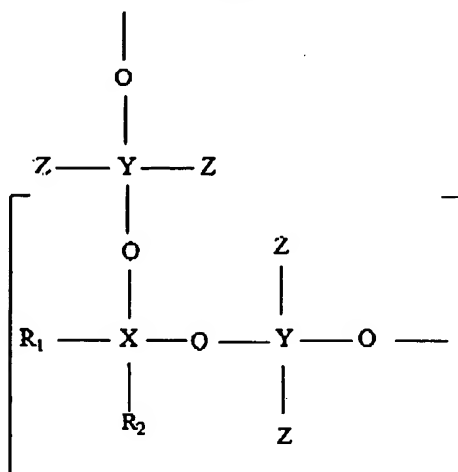
Formula II

Where R = Alkyl (C₁-C₈), Phenyl, Substituted Phenyl

X, Y = Si, Ti, Ge or Sn

Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl

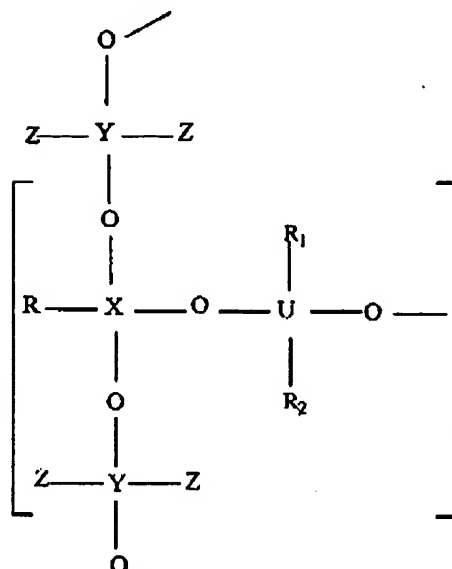
21. (Currently Amended) The non-aqueous sol-gel spin-on glass material of claim 18, having the following formula:

Formula III

Where R_1 = Phenyl, Ethyl, Propyl, Trifluoropropyl
 R_2 = Methyl, Ethyl
 X, Y = Si, Ge, Ti or Sn
 Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl.

22. (Currently Amended) The non-aqueous sol-gel spin-on glass material of claim 18 having the following formula:

Formula IV



Where R = Alkyl (C_1 - C_{10}), Phenyl, Substituted Phenyl
 R_1 = Alkyl, Phenyl
 R_2 = Alkyl, Phenyl
 X, U, Y = Si, Ge, Ti or Sn
 Z = Alkyl, Substituted Alkyl, Phenyl, Substituted Phenyl.

23-25 (Canceled)

25-26. (Currently Amended) The non-aqueous sol-gel spin-on glass material of claim 17 18, further comprising a UV light blocking material and/or an oxygen scavenger.

26-27. (Currently Amended) The non-aqueous sol-gel spin-on glass material of claim 17 18, further comprising a light-scattering material.

34. (New) The non-aqueous sol-gel spin-on glass material of claim 18, wherein the phosphor dopant comprises YAG base phosphor or moisture sensitive phosphor nano-particles.

35. (New) A process for producing the non-aqueous sol-gel spin-on glass material of claim 18, the process comprising reacting an alkyl substituted trialkoxysilane or dialkyl substituted dialkoxysilane with a silane diol, wherein said alkyl group has from 1 to 8 carbon atoms, wherein the reaction of the alkyl substituted trialkoxysilane or dialkyl substituted dialkoxysilane silane with the silane diol is carried out in a non-aqueous medium in the presence of a catalyst, the process further comprising adding to said sol-gel spin-on glass material a phosphor dopant, which comprises YAG base phosphor or moisture sensitive phosphor nano-particles or an organic material selected from organic dyes or metal complexes.

36. (New) The process of claim 35, wherein the phosphor dopant comprises YAG base phosphor or moisture sensitive phosphor nano-particles.